PMS25

DIRECT MEDICAL COSTS OF OSTEOARTHRITIS IN SPAIN

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OBJECTIVES: Osteoarthritis (OA) is the most common musculoskeletal disease, with around 1.6 million patients in Spain. The aim of this study was to determine health care resource utilization and direct medical costs of patients suffering OA of the hip, knee and wrist in Spain in 2009. **METHODS:** A cost-of-illness analyses was performed to estimate direct medical costs of patients suffering OA. Prevalence data on OA by the Spanish Society of Rheumatology showed a value of 18% for the Spanish population. a semi-structured questionnaire was sent to rheumatologists to collect data on health care resource utilization and costs. Inpatient costs were considered from the perspective of the public health care system. Direct medical costs included were ambulatory, diagnostic tests, physiotherapy, surgery, drug and administration costs. All costs referred to 2009. **RESULTS:** Patients diagnosed with OA of the hip, knee and wrist in Spain were estimated to be 1.6 million in 2009. Total medical costs for the Health Care System resulted as following: drug use 95€ million, health care personnel 251€ million, diagnostic tests 20€ million, physiotherapy 93€ million, surgery 105€ million and adverse effects due to OA medication 25€ million. Due to demographic changes and increasing prevalence, the number of patients is estimated to grow to 1.7 million with total costs of 717€ million in 2014. **CONCLUSIONS:** Direct medical costs for OA were estimated at 598€ million for Spanish patients in 2009. Health care personnel represented 43% of the total direct medical costs. Aging of the population, development of new drugs and increasing patient expectations are likely to increase the future economic impact of OA, which remains a major public health burden.

PMS26

HIP FRACTURES IN THE ELDERLY: COST OF ILLNESS STUDY UNDER A PUBLIC HOSPITAL PERSPECTIVE IN RIO DE JANEIRO, BRAZIL

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OBJECTIVES: To assess direct medical costs associated to hospital treatment of hip fractures in the elderly in a public hospital in Rio de Janeiro, Brazil and their association with demographic and clinical variables. **METHODS:** Observational, prospective study to assess resource utilization and direct medical costs associated to elderly hip fracture hospitalization in 2007 and 2008, under the health care provider perspective. a standard data collection instrument was used to register identified resources during prospective medical charts review. The resource utilization was converted into Brazilian Real (BRL), based on 2010 prices. Descriptive analysis of costs and resource utilization and their association with clinical and demographic variables were performed. **RESULTS:** Eighty two patients were included, 81.7% female, mean age of 76.96 years, hospitalization mean time of 12.66 days. Median total costs per patient were 3,064.76 BRL (IC95%: 2,817.63–3,463.98). Clinical hospitalization and surgical procedure were responsible for 65.61% and 24.94% of costs, respectively. Median costs for patients submitted to surgical procedure until the fourth day of hospitalization were lower than median costs for patients submitted after the fourth day (2,136.45 BRL and 3,281.45 BRL, respectively, $P < 0.00001$). A significant difference in average costs per type of surgical procedure was also observed. Variables sex, age over 80 years, fracture site and presence of cardiovascular disease were not associated with statistically significant differences in total costs. **CONCLUSIONS:** Clinical hospitalization and surgical procedure were the main cost components observed. Higher cost associated to inpatient treatment of hip fractures in patients who performed surgery after the fourth day of hospitalization added to available evidence about an increased risk of mortality after this period reinforce the need of priority establishment to treat elderly patients with hip fracture.

PMS27

ANALYSIS OF DIRECT MEDICAL AND NON-MEDICAL COSTS FOR CARE OF RHEUMATOID ARTHRITIS PATIENTS USING LARGE COHORT DATABASE, IORRA

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OBJECTIVES: To examine annual direct medical & non-medical cost in large-scale rheumatoid arthritis (RA) patient cohort (IORRA) in Japan. **METHODS:** From patients' perspective, we calculated direct medical (out-of-pocket costs to hospital & pharmacy and cost for complementary & alternative medicine(CAM)) and non-medical costs (caregiving, transportation,self help devises, house modification) of RA patients, participants of the 15–17th IORRA Studies in Oct. 2007- Oct. 2008. We also assessed correlations between these costs and RA diseaseactivity, disability level and QOL. **RESULTS:** Data from 5204 RA patients were extracted. Annual direct medical costs were JPY132,000 (out-of-pocket to hospital, USD1 = JPY90), JPY84,000 (out-of-pocket to pharmacy) and JPY 146,000 (CAM)), respectively. Annual direct non-medical costs were JPY105,000 (caregiving), JPY22,000 (transportation), JPY30,000 (self help devises) JPY188,000 (house modification), respectively. Considering utilization rates for each cost component (hospital/pharmacy: 100%, CAM: 31.6%, caregiving: 10.5%, transportation: 100%, self help devices: 21.4%, house modification: 21.4%). We assumed that annual medical/non-medical cost per RA patient was JPY264,000 and JPY61,000, respectively. These costs increased progressively with worsening RA diseaseactivity, disability level, or QOL. For example, patients with lower Eq-5D score (less than 0.5) spent more money than those with higher one (more than 0.8). Average medical and non-medical costs among them were JPY 30,802 vs. JPY17,887 and JPY229,519 vs. JPY19,536, respectively. **CONCLUSIONS:** Heavy economic burden lies in RApatients and grows heavier as the disease state is exacerbated using IORRA database. The results also suggest that the increase in medical/non-medical cost may be suppressed by proactively controlling RA.

PMS28

COST-EFFICACY ANALYSIS OF TNF ALPHA ANTAGONISTS IN THE TREATMENT OF RHEUMATOID ARTHRITIS

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OBJECTIVES: Estimate the efficiency of Tumor Necrosis Factor α (TNFα) antagonists in moderate to severe rheumatoid arthritis (RA). **METHODS:** The analysis, performed from the Spanish Health Care System perspective, considers the annual cost of the drugs, and their efficacy, measured through the number needed to treat (NNT) to gain an additional patient who achieves ACR20, ACR50 and ACR70 response. Drug costs were obtained from a Spanish database. Data relative to efficacy was derived from a meta-analysis, which evaluated the anti–TNFα drugs adalimumab (ADA), etanercept (ETA), and infliximab (INF). Efficiency was estimated in terms of incremental cost-efficacy ratios (ICER). **RESULTS:** Annual treatment cost per patient-year with ADA, ETA and INF is of 13.116€, 12.314€, and 14.047€, respectively. Applying the: 1) ACR20 criteria, the NNT with ADA, ETA, and INF were 4.2 (95% CI, 3.4–5.3), 6.5 (5.2–8.8), and 4, 5(3.4–6.8), respectively; 2) the ACR50 criteria, the NNT with ADA, ETA, and INF were 4.1 (3.4–5.1), 4.4 (3.7–5.5), and 6.6 (4.7–11.5), respectively; and 3) the ACR70 criteria, the NNT with ADA, ETA, and INF were 5.7 (4.6–7.5), 6.8 (5.3–9.4), and 8.6 (5.8–16.7), respectively. The incremental annual cost per additional patient who achieves ACR20 response with ADA, ETA, and INF is of €54.871 (95% CI, €45,080–70,095), €80,598 (€64,288–€107.999), and €63,329 (€47,268€–€95,923), respectively. The incremental annual cost per additional patient who achieves ACR50 response with ADA, ETA, and INF is of €53,368 (€44,407–€66,828), €54,596 (€45,691–€67,813), and €93,072 (€65,451–€161,030), respectively. The incremental annual cost per additional patient who achieves ACR70 response with ADA, ETA, and INF is of €74,537 (€59,759–€99,025), and €83,661 (€65,481–€115,815), €120,652 (€81,242–€34,319), respectively. **CONCLUSIONS:** The incremental cost per patient who achieves an ACR20, ACR50, and ACR70 response is lower with ADA, though quite similar to ETA, being with both (ADA and ETA) lower than with INF, in the Spanish setting.

PMS29

RETROSPECTIVE CHART REVIEW TO ASSESS COSTS RELATED TO OSTEOPOROTIC FRACTURES IN SLOVENIA AND SERBIA

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OBJECTIVES: To evaluate direct medical costs of treatment for osteoporotic fractures in Slovenia and Serbia from a public payer and patient perspective directly after fracture and up to 1 year follow-up. **METHODS:** A medical chart review, examining medical resources used to treat the 3 most common osteoporotic fractures (proximal femur, vertebral and distal radius) in the first year after the event. Collection of data from 1 osteoporotic center in Slovenia and 3 in Serbia was carried out by local investigators between December 2009 and March 2010. The treatment costs for each fracture type from the public payer and patient perspective were calculated. The analysis was divided into 2 parts: intervention directly after the fracture (including cost of hospitalization, ambulatory visits, procedures, examinations, and medications) and follow-up for up to 1 year after the event (including costs of hospitalization, outpatient visits, examinations, rehabilitation, medications and devices). **RESULTS:** A total of 240 patients aged >50 years with low-trauma fractures occurring within 5 years before study initiation were included. Average annual costs of treatment of a proximal femur fracture in Slovenia were estimated at €4727 (costs directly after fracture = €4088 and follow-up period = €639) and in Serbia €3002 (€2359 and €642, respectively). The cost of treatment of a vertebral fracture was €4319 in Slovenia (€3762 and €557, respectively) and in Serbia €390 (€103 and €287, respectively). Treatment of the distal radius fracture was €1567 in Slovenia (€1046 and €521, respectively) and in Serbia €163 (€57 and €106, respectively). **CONCLUSIONS:** Treatment of proximal femur fractures vs. vertebral and distal radius fractures generated the highest costs. The treatment costs were significantly higher in Slovenia compared with Serbia. Large disparities between the costs of hospitalization in both countries were the major reason for the observed differences.

PMS30

MEDICINE TREATMENT COST OF RHEUMATOID ARTHRITIS BEFORE AND AFTER TREATMENT WITH BIOLOGICAL DRUGS

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OBJECTIVES: To investigate the medicine treatment cost of rheumatoid arthritis (RA) before and after treatment with biological drugs in the private health care sector of South Africa. **METHODS:** A quantitative retrospective drug utilization review was performed on medicine claims data of a pharmacy benefit management company (PBM) in South Africa. Data for a four-year period (January 1, 2005 to December 31,

2008) were used to determine the medicine treatment cost of 141 RA patients before and after treatment with biological drugs (namely infliximab, adalimumab and etanercept). [RSA Rand (R)/$US = 6.38112 (2005); 6.78812 (2006); 7.06926 (2007) and 8.27505 (2008)]. **RESULTS:** Biological drugs represented 81.43% of the total medicine treatment cost of RA patients (n = R25,432,294.04). Other medication (excluding biological drugs) prescribed to RA patients *before* starting with biological items represented 8.86% (n = R2 254 330.44) of their total medicine treatment cost; those prescribed *after* treatment with biological drugs, represented 3.91% (n = R992,533.62). The number of prescriptions for other medication (excl. biological drugs), decreased from the period *before* to the period *after* treatment with biological drugs from 6271 to 2120. The average number of the other medicine items (excl. biological) per prescription decreased from 2.79 ± 2.30 *before* to 2.35 ± 1.86 *after* treatment with biological drugs. The average cost per biological drug (R8 073.61 ± 2 210.46) was practically significantly (d > 0.8) higher than the average cost of other medication prescribed before (R128.45 ± 155.93) and *after* (R198.66 ± 888.31) treatment with biological drugs. **CONCLUSIONS:** Although biological drugs used in the treatment of RA are very expensive, it seems that the number of other medication prescribed to RA patients, as well as the average number of items per prescription decreased after treatment therewith. Further research is needed to investigate future medicine treatment cost of RA patients treated with biological drugs.

PMS31

THE IMPACT OF CHANGES IN ADALIMUMAB, ETANERCEPT, AND INFLIXIMAB DOSES ON THE COSTS OF TREATING RHEUMATOID ARTHRITIS

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OBJECTIVES: To review and analyze evidence on the changes in dose of adalimumab, etanercept and infliximab over time in adult patients with rheumatoid arthritis (RA) and the associated impact on treatment costs. **METHODS:** MEDLINE, EMBASE and NHS-EED were systematically searched to identify English language randomised controlled trials, cohort studies and observational studies published between January 1993 and December 2009. Conference abstracts were also hand searched from EULAR (2002 onwards) and ACR (2006 onwards). Studies were selected using predefined criteria, using two independent reviewers. Data pertaining to dose change were then analyzed through pair-wise, random effects meta-analyses carried out in a frequentist framework with heterogeneity assessed using the I^2 statistic. Associated cost data were extracted and the impact of change in dose on cost was investigated. **RESULTS:** Forty-five articles met the selection criteria with 23 containing dose change data and 26 containing cost data. a significantly greater proportion of patients on infliximab had a dose escalation compared to those on etanercept (odds ratio 0.17 95% CI 0.07, 0.43; $P < 0.001$) or adalimumab (odds ratio 0.25 95% CI 0.2, 0.3; $P < 0.001$). On average, 43.3% of infliximab patients, 7.3% of etanercept patients and 10.9% of adalimumab patients had their dose increased. RA related costs were on average 36% higher in patients who had their infliximab dose increased compared to 4% in patients on etanercept. No suitable data for adalimumab were available. **CONCLUSIONS:** A significantly greater proportion of infliximab patients required dose escalation compared to etanercept and adalimumab patients. There is some evidence to suggest that the escalation in dose required to maintain clinical benefit, results in substantially higher costs of treating RA.

PMS32

MICRO-COSTING ANALYSIS AND TARIFF COMPARISON: THE INTERSPINOUS PROCESS DEVICE CASE

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OBJECTIVES: In Italy the recent update of the DRG system has led to evaluate the effect on the diffusion of new therapies. The Interspinous Process Device (IPD) implantation represents an innovative strategy for different degenerative spinal pathologies with potential clinical and economic advantages. The aim of this study is to evaluate the hospitalization costs for IPD procedure according to a micro-costing approach and to compare it with current regional DRG tariffs. **METHODS:** The project, conducted from the hospital perspective, is performed in one pilot centre (Varese hospital), regional benchmark for this kind of procedure in which learning curve is considered completed. The cost analysis is based on the clinical pathway drawn up from the information provided by the medical team. Resource use including staff time, diagnostic tests, drugs, consumables and technology equipment utilization are collected from interviews to the team. Operating room costs, administrative and general costs and follow up hospital resource consumption are derived from hospital accounting data. Unit costs are collected either from hospital accounting or regional tariffs for specialist services. **RESULTS:** The total average cost estimated for a patient submitted to an IPD implantation is €5644, with an average LOS of 2.7 days. The average cost for the implantation of 1 IPD is €4515, value assigned to increase to €7087 for multilevel approaches with the implantation of 2 devices in the same procedure (42% of cases). Excluding general costs and the number of IPDs implanted, the main key cost driver are consumables and devices (62%), and operating room costs (16%). **CONCLUSIONS:** The regional tariff of the DRG related to this procedure (Lombardia Region, DRG 500, version 24) does not cover the hospitalization costs estimated, especially for the multilevel approaches. This leads to consider the effects of current reimbursement on the adoption of innovative therapy.

PMS33

COST-EFFECTIVENESS OF TOCILIZUMAB FOR THE MANAGEMENT OF PATIENTS WITH ACTIVE RHEUMATOID ARTHRITIS DESPITE PREVIOUS DMARD THERAPY IN MEXICO

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OBJECTIVES: Rheumatoid arthritis (RA) is a chronic, progressive, inflammatory disease that affects physical functioning and quality-of-life and is associated with premature mortality and substantial economic burden. We aimed to assess cost-effectiveness of tocilizumab added to disease-modifying antirheumatic drugs (DMARD) in patients with active RA despite DMARD therapy from the Mexican public health care system perspective. **METHODS:** Two models were designed to compare tocilizumab 8 mg/kg every 4 weeks; infliximab 3 mg/kg (weeks 0, 2, 6, 14 and 22); etanercept 25 mg twice a week and adalimumab 40 mg every other week. First model included only 6-month acquisition costs of drugs and infusion-related cost for infliximab and tocilizumab; the second was a Markov model with four states defined according to Disease Activity Score (DAS-28). Indirect comparison techniques were needed to adjust American College of Rheumatology (ACR) responses rates found in 10 clinical trials with biological agents. ACR70 at week 24 and overall days spent in remission during 5 years were main outcomes. Unit costs of medications were gathered from public bids; an expert panel was constituted to estimate 3-month resource use by health state. All costs are expressed in 2009 US dollars. **RESULTS:** First six-month costs were lower with tocilizumab (USD$4418) than with etanercept (USD$5,020), infliximab (USD$5484) and adalimumab (USD$5655). Adjusted ACR70 response rate was higher for tocilizumab than for anti-tumor necrosis factor (TNF) agents: 26% vs. 19%, 18% and 12% for adalimumab, etanercept and infliximab, respectively. Markov model estimates show savings of USD$623 up to USD$1321 per patient treated with tocilizumab instead of anti-TNF. Tocilizumab was also associated with mean gains of 9, 12 and 20 days in remission compared to etanercept, adalimumab and infliximab. **CONCLUSIONS:** When used instead of anti-TNF agents, add-on treatment with tocilizumab brings both health benefits and cost-savings for RA patients with inadequate response to previous DMARD therapy.

PMS34

COST-EFFECTIVENESS OF GOLIMUMAB IN PSORIATIC ARTHRITIS FROM THE UK PAYER PERSPECTIVE

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BACKGROUND: Golimumab is a novel TNF-α inhibitor licensed to treat patients with active PsA. Although its clinical efficacy has been proven in clinical trials, its cost-effectiveness is yet to be established. **OBJECTIVES:** To estimate the cost-effectiveness of golimumab among patients with active PsA from the UK NHS perspective. **METHODS:** A decision analytic model was used to simulate progression of a hypothetical cohort of active PsA patients on golimumab and other TNF-α inhibitors as well as palliative care. The clinical evidence was derived from clinical trials of TNF-α inhibitors and compared using mixed treatment models. The primary outcome measure was quality adjusted life-years (QALYs) estimated based on change in Health Assessment Questionnaire (HAQ) and Psoriasis Area Severity Index (PASI) from baseline. The annual acquisition cost of golimumab was assumed to be identical to annual cost of other subcutaneous TNF-α inhibitors. The resource use costs and outcomes were discounted at 3.5% over a period of 40 years. The uncertainty surrounding important variables was further explored using probabilistic sensitivity analyses (PSA). **RESULTS:** TNF-α inhibitors were significantly superior to palliative care but comparable to each other on Psoriatic Arthritis Response Criteria (PsARC), HAQ and PASI response. The incremental cost-effectiveness ratio (ICERs) for golimumab compared to palliative care was £16,811 for PsA patients and £16,245 for a subgroup of PsA patients with significant psoriasis. At an acceptability threshold of £30,000 per QALY, the probability of golimumab being cost-effective is 89%. **CONCLUSIONS:** Once monthly, golimumab is a cost-effective treatment alternative for patients with active PsA. With its patient focussed attributes, golimumab is likely to offer additional choice in PsA treatment.

PMS35

COST-EFFECTIVENESS OF TERIPARATIDE IN PATIENTS WITH GLUCOCORTICOID-INDUCED OSTEOPOROSIS IN SWEDEN

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OBJECTIVES: Glucocorticoid induced osteoporosis is the most common cause of secondary osteoporosis. The objective of this study was to estimate the cost-effectiveness of teriparatide in patients with Glucocorticoid induced osteoporosis in Sweden. **METHODS:** A cost-effectiveness analysis was developed to evaluate the direct medical and tertiary care costs and clinical outcomes of an 18-month regimen of daily teriparatide in patients with glucocorticoid induced osteoporosis (GIO). a Monte Carlo simulation was used to model the cost and effects of a simulated cohort of 100,000 patients with GIO treated with teriparatide compared to no teriparatide treatment. The model simulated the course of events in 6-month cycles in individual patients over a lifetime horizon. During each cycle the patients were at risk of experiencing clinical